## ***R E M A R K S***

Claims 18-30 are pending in this application. Claims 18-22 and 26-28 have been amended such that the recitation of "gene" has been replaced with "polynucleotide". Additionally, claim 18 has been amended in order to correctly reflect the sequence I.D. numbers that correspond to the sequences in the sequence listing. Lastly, claims 22, 26, 27 and 28 have been amended to be placed into independent format but lacking the recitation of "isolated". Accordingly, no new matter has been added.

In view of the following remarks, Applicant respectfully requests that the Examiner withdraw all rejections and allow the currently pending claims.

***Issues under 35 U.S.C. §112, first paragraph***

I. The Examiner has rejected claims 18-30 under 35 U.S.C. §112, second paragraph, as allegedly having insufficient written description in the specification. Applicant respectfully traverses.

Applicant respectfully submits that the specification provides sufficient information to conclude that Applicant was in possession of the polynucleotide genus recited in (e) of Claim 18. This is because the specification describes

structural attributes that are common to the members of the polynucleotide genus and that distinguish the polynucleotide genus. For example, the specification describes that the polynucleotide genus has a 4.4 Kbp structural attribute. The specification also describes that the polynucleotide genus has the structural attribute of being amplifiable with the primers of SEQ ID Nos: 7 to 15. Applicant respectfully submits that these descriptions in the specification sufficiently describe the polynucleotide itself, when combined with the considerations that the specification describes the origin of the polynucleotide and the function of the aldehyde oxidase encoded by the polynucleotide. The Office Action has not set forth reasons of why these considerations, when established, are insufficient to meet the written description requirement.

Moreover, the above aspect of the rejection is based on the misconception that the polynucleotide recited in (e) of Claim 18 encompasses "all plant aldehyde oxidase". No technical basis has been provided to assert that all polynucleotides encoding plant aldehyde oxidase have a 4.4 Kbp structure. This assertion also ignores the Reply under 37 C.F.R. 1.116 dated October 24, 200, which states on page 6 as follows:

> Applicant respectfully submits that the claimed invention does not cover all genes encoding an enzyme having aldehyde oxidase activity. Further requirements, such as a gene

with specific size (4.4 Kbp), which is derived from a plant, and which can be amplified by using specific primers, are required.

The Office Action also alleged that the specification insufficiently describes the amplification, such that the primers fail to define a structural attribute of the polynucleotide genus recited in (e) of Claim 18. Applicant addresses this issue below.

Applicant respectfully emphasizes that the primers are sufficient to set forth a structural attribute in the polynucleotide recited in (e) of Claim 18. In the amplification, the primers anneal to a polynucleotide member, which in turn describes a particular nucleotide sequence in the polynucleotide member. It is unnecessary for the specification to describe *haec verba* the parameters for the amplification, since one of ordinary skill in the art can certainly determine from the information provided in the specification, the parameters thereof. The specification recites the specific nucleotide sequences of the primers utilized in the amplification thereof. It is well known in the present art that the properties of the primers and DNA polymerase utilized therein dictate the essential parameters for amplification. The specific nucleotide sequences given to the primers are, of

course, sufficient to define the properties of the primers. The DNA polymerase that is utilized in the amplification is well known in the art. The essential amplification parameters as utilized with maize would hold in the amplification, even if a polynucleotide obtainable form maize were replaced with a polynucleotide obtainable from a plant other than maize. The previously submitted material (CLONTECH Lab., Inc.(1997), Marathon TM cDNA amplification Kit User Manual) in step 6, "XIII Generation of Full-Length cDNA by PCR" also recites specific parameters of the amplification as well as an equation for determining the extension time when merely the length of the polynucleotide is known, which in this case is 4.4Kbp.

Further, the Office Action contends that the specification insufficiently describes the amplification, because the nucleotide sequence for the primers originates from maize. However, the nucleotide sequence origin of the primer does not limit its use to the origin, i.e., maize. As described above, the amplification parameters would still be applicable when utilizing a polynucleotide obtainable from a plant other than maize. In the amplification with a plant other than maize, one of ordinary skill in the art would also mix the primers into the amplification mixture in a sufficiently similar way when utilized with maize.

The Office Action also alleges that the nucleotide sequence of the primers are "only specific to corn", by asserting that the nucleotide sequences for said poly-nucleotide from another plant are unknown. However, this assertion directly contradicts the teachings in the specification, which teach that the polynucleotides encode therein a particular nucleotide sequence that allows the polynucleotide to be amplified with said primers. Such information on the nucleotide sequences in the polynucleotide genus is sufficient to describe the amplification. One of ordinary skill in the art can readily appreciate from such information in the specification that the primers can be applied to plants other than maize.

In this regard, Applicant respectfully submits that such descriptions of the amplification satisfy the written description requirement, such that the primers describe a structural attribute of the polynucleotide genus recited in (e) of Claim 18.

Furthermore, Applicant has amended the claims to read on a polynucleotide, as suggested by the Examiner. Thus, the aspect of the rejection that relates to the citation of the word "gene" is overcome.

II. The Examiner has also rejected Claims 18-30 under 35 U.S.C. § 112, first paragraph as allegedly introducing new matter.

Applicant traverses. Reconsideration and withdrawal is respectfully requested.

Applicant respectfully submits that the present claims do not include "new matter". The present specification teaches on page 4, lines 18-19, that "[t]he gene of the present invention can be obtained from a plant, for example, maize or the like". The specification on page 9, line 17 to page 10, line 2, teaches a method of amplification. It should be noted that the teachings on pages 9 to 10, describing the amplification are not limited to merely maize. Such descriptions are sufficient to describe the utilization of polynucleotides prepared from plants other than maize. From such teachings in the specification, one of ordinary skill in the art can apply the primers for amplification with the polynucleotides encoding aldehyde oxidase prepared from plants other than maize. As described above, the particular amplification parameters can be determined by one of ordinary skill in the art. Considering these factors, the specification describes sufficiently, utilizing the primers with the polynucleotide encoding aldehyde oxidase prepared from a plant other than maize. The claims reflect this subject matter. Thus, no new matter is present.

In view of the above, applicant respectfully submits that the present claims in the specification fully comply with the

requirements of 35 U.S.C. § 112, first paragraph. Accordingly, the Examiner is respectfully requested to withdraw each of these rejections.

***Objection to the Specification***

At page 5 of the outstanding Office Action, the Examiner objects to the specification as allegedly failing to provide proper antecedent basis for the claimed subject matter. In particular, the Examiner asserts that applicant's disclosure does not teach the use of the primers to amplify broadly from a plant, they teach only primers to amplify from a maize plant.

As support for this assertion the Examiner cites 37 CFR § 1.75(d)(1) and MPEP § 608.01(o). This rejection is respectfully traversed.

37 CFR § 1.75(d)(1) and MPEP § 608.01(o) deal with claimed subject matter not having antecedent basis in the specification. However, as already discussed above, Applicant respectfully submits that sufficient description exists for the claimed terminology. This rejection is therefore moot. Reconsideration and withdrawal thereof are respectfully requested.

In view of the above, Applicant respectfully submits that the present claims define subject matter that satisfies all statutory requirements of patentability. Accordingly, the

Examiner's is respectfully requested to withdraw all rejections and allow the currently pending claims.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Craig A. McRobbie (Reg. No. 42,874) at the telephone number of the undersigned below.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant respectfully petitions for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of $$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

## VERSION WITH MARKINGS TO SHOW CHANGES MADE

*In the Claims*:

The claims have been amended as follows:

Claim 18. (Amended) An isolated polynucleotide encoding an aldehyde oxidase enzyme, wherein said enzyme oxidizes [gene encoding an amino acid sequence of an enzyme capable of oxidizing] an aldehyde compound to a carboxylic acid, and having a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding an amino acid sequence shown by SEQ ID NO: [1] 2;

(b) a nucleotide sequence shown by SEQ ID NO: [2] 1;

(c) a nucleotide sequence encoding an amino acid sequence shown by SEQ ID NO: [3] 4;

(d) a nucleotide sequence shown by SEQ ID NO: [4] 3; and

(e) a nucleotide sequence encoding an amino acid sequence of a 4.4 Kbp gene obtainable from a plant, which is amplifiable with a combination of a PCR primer selected from the group consisting of SEQ ID NO: 7, SEQ ID NO: 8, and SEQ ID NO: 13 and a PCR primer selected from the group consisting of SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 14, and SEQ ID NO: 15.

Claim 19. (Amended) The isolated polynucleotide [aldehyde oxidase gene] according to claim 18, wherein the aldehyde compound is indoleacetaldehyde and the carboxylic acid is indoleacetic acid.

Claim 20. (Amended) The isolated polynucleotide [aldehyde oxidase gene] according to claim 18, which is derived from maize plant (Zea mays L).

Claim 21. (Twice Amended) The isolated polynucleotide [aldehyde oxidase gene] according to claim 19, which is derived from maize plant (Zea mays L).

Claim 22. (Amended) A plasmid comprising [the aldehyde oxidase gene according to claim 18] a polynucleotide encoding an aldehyde oxidase enzyme, wherein said enzyme oxidizes an aldehyde compound to a carboxylic acid, and having a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding an amino acid sequence shown by SEQ ID NO: 2;

(b) a nucleotide sequence shown by SEQ ID NO: 1;

(c) a nucleotide sequence encoding an amino acid sequence shown by SEQ ID NO: 4;

(d) a nucleotide sequence shown by SEQ ID NO: 3; and

(e) a nucleotide sequence encoding an amino acid sequence of a 4.4 Kbp gene obtainable from a plant, which is amplifiable with a combination of a PCR primer selected from the group consisting of SEQ ID NO: 7, SEQ ID NO: 8, and SEQ ID NO: 13 and a PCR primer selected from the group consisting of SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 14, and SEQ ID NO: 15.

Claim 26. (Amended) A process for constructing an expression plasmid which comprises ligating:

(1) a promoter capable of functioning in a plant cell, (2) [an aldehyde oxidase gene according to claim 18] a polynucleotide encoding an aldehyde oxidase enzyme, wherein said enzyme oxidizes an aldehyde compound to a carboxylic acid, and having a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding an amino acid sequence shown by SEQ ID NO: 2;

(b) a nucleotide sequence shown by SEQ ID NO: 1;

(c) a nucleotide sequence encoding an amino acid sequence shown by SEQ ID NO: 4;

(d) a nucleotide sequence shown by SEQ ID NO: 3; and

(e) a nucleotide sequence encoding an amino acid sequence of a 4.4 Kbp gene obtainable from a plant, which is amplifiable

with a combination of a PCR primer selected from the group consisting of SEQ ID NO: 7, SEQ ID NO: 8, and SEQ ID NO: 13 and a PCR primer selected from the group consisting of SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 14, and SEQ ID NO: 15, and

(3) a terminator capable of functioning in a plant in a functional manner and in the order described above.

Claim 27. (Amended) An expression plasmid comprising:

(1) a promoter capable of functioning in a plant cell,

(2) [an aldehyde oxidase gene according to claim 18] a polynucleotide encoding an aldehyde oxidase enzyme, wherein said enzyme oxidizes an aldehyde compound to a carboxylic acid, and having a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding an amino acid sequence shown by SEQ ID NO: 2;

(b) a nucleotide sequence shown by SEQ ID NO: 1;

(c) a nucleotide sequence encoding an amino acid sequence shown by SEQ ID NO: 4;

(d) a nucleotide sequence shown by SEQ ID NO: 3; and

(e) a nucleotide sequence encoding an amino acid sequence of a 4.4 Kbp gene obtainable from a plant, which is amplifiable with a combination of a PCR primer selected from the group

consisting of SEQ ID NO: 7, SEQ ID NO: 8, and SEQ ID NO: 13 and a PCR primer selected from the group consisting of SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 14, and SEQ ID NO: 15, and

(3) a terminator capable of functioning in a plant which are ligated in a functional manner and in the order described above.

Claim 28. (Amended) A process for controlling production of an aldehyde oxidase in a transformed host cell which comprises

introducing, into a host cell, an expression plasmid comprising:

(1) a promoter capable of functioning in a plant cell,

(2) [an aldehyde oxidase gene according to claim 18] a polynucleotide encoding an aldehyde oxidase enzyme, wherein said enzyme oxidizes an aldehyde compound to a carboxylic acid, and having a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding an amino acid sequence shown by SEQ ID NO: 2;

(b) a nucleotide sequence shown by SEQ ID NO: 1;

(c) a nucleotide sequence encoding an amino acid sequence shown by SEQ ID NO: 4;

(d) a nucleotide sequence shown by SEQ ID NO: 3; and

(e) a nucleotide sequence encoding an amino acid sequence of a 4.4 Kbp gene obtainable from a plant, which is amplifiable with a combination of a PCR primer selected from the group consisting of SEQ ID NO: 7, SEQ ID NO: 8, and SEQ ID NO: 13 and a PCR primer selected from the group consisting of SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 14, and SEQ ID NO: 15, and

(3) a terminator capable of functioning in a plant which are ligated in a functional manner and in the order described above to transform said host cell.